Space Weather Forecast

Issued on Wednesday, 08 November 2023 at 01:14 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Risk of G1/Minor Geomagnetic Storms declining in the coming days. Chance of isolated Moderate flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity has been Low with only common class flares in the last 24 hours. There are five numbered and one unnumbered sunspot region on the visible disc. The largest region in the southern hemisphere continues to be fairly stable. Two regions have seen multiple spots emerge in recent hours, likely increasing the flare risk from this region in the coming hours/days and will be closely monitored. The remaining regions remained stable.

No Earth directed Coronal Mass Ejections (CMEs) have been observed in available imagery.

Solar Wind / Geomagnetic Activity: Solar winds showed the continued impact of fast solar winds. Wind speeds were strong, generally 650-700 km/s. Total magnetic field strength (Bt) showed a slowly rising trend, but remained weak. The important north-south component (Bz) varying only weakly. Geomagnetic activity has been generally Quiet to Unsettled (Kp 2-3), but with a G1/Minor Storm (Kp 5) interval 07/0000-0300UTC, as observed by BGS.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Generally Low solar activity is expected through the period, but with a chance of isolated Moderate flares.

Solar Wind / Geomagnetic Activity: No CMEs currently forecast to reach Earth. Solar wind speeds are at strong levels, around 650 km/s, due to a coronal hole fast wind. Elevated to strong wind speeds are likely to continue through Day 1 into Day 2 (8-9 Nov), before a gradual decline through Days 3 and 4 (10-11 Nov).

Geomagnetic activity expected to be generally Unsettled initially, with a slight chance of further isolated G1/Minor Storm intervals on Day 1. This risk reducing into the period with activity expected to gradually decline through the following days as the HSS eases to generally Quiet levels.

UK Aurora Forecast: Aurora is likely to remain visible for parts of northern Scotland early on day 1 (8 Nov), likely declining for subsequent days.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is most likely to remain at background levels with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	20	10	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	30	30	30	30
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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